

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/024314

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K35/72 A61K35/80 A61K31/07 A61K31/355 A61P39/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, EMBASE, BIOSIS, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96/13255 A (UNIV ILLINOIS) 9 May 1996 (1996-05-09) claims 1,8,12,20,22,28 page 23, line 6	1,5,11, 15-18,20
X	GUERIN M ET AL: "Haematococcus astaxanthin: applications for human health and nutrition" TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 21, no. 5, May 2003 (2003-05), pages 210-216, XP004422156 ISSN: 0167-7799 the whole document	1,4,5,20

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

13 December 2004

Date of mailing of the international search report

28/12/2004

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/024314

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>CRONIN J R: "The potential of astaxanthin: A new multipurpose, high-power antioxidant" ALTERNATIVE AND COMPLEMENTARY THERAPIES 2002 UNITED STATES, vol. 8, no. 1, 2002, pages 44-49, XP008040145 ISSN: 1076-2809 page 46, middle column, paragraph 2 -----</p>	1,5,6
X	<p>DATABASE WPI Section Ch, Week 199013 Derwent Publications Ltd., London, GB; Class B05, AN 1990-096261 XP002309715 & JP 02 049091 A (SUNTORY LTD) 19 February 1990 (1990-02-19) abstract -----</p>	1,2
X	<p>SARRAFIZADEH R ET AL: "New therapies for the treatment of age-related macular degeneration" EXPERT OPINION ON THERAPEUTIC PATENTS 2000 UNITED KINGDOM, vol. 10, no. 3, 2000, pages 333-341, XP002309713 ISSN: 1354-3776 page 335, left-hand column, paragraph 2.1 -----</p>	1
X	<p>OHGAMI KAZUHIRO ET AL: "Effects of astaxanthin on lipopolysaccharide-induced inflammation in vitro and in vivo." IOVS, vol. 44, no. 6, June 2003 (2003-06), pages 2694-2701, XP002309714 page 2694, abstract -----</p>	1
X	<p>CHEW BOON P ET AL: "A comparison of the anticancer activities of dietary beta-carotene, canthaxanthin and astaxanthin in mice in vivo" ANTICANCER RESEARCH, vol. 19, no. 3A, May 1999 (1999-05), pages 1849-1854, XP008040144 ISSN: 0250-7005 page 1849, abstract -----</p>	1,16
Y	<p>KURASHIGE M ET AL: "INHIBITION OF OXIDATIVE INJURY OF BIOLOGICAL MEMBRANES BY ASTAXANTHIN" PHYSIOLOGICAL CHEMISTRY AND PHYSICS AND MEDICAL NMR, XX, US, vol. 22, 1990, pages 27-38, XP002945512 ISSN: 0748-6642 page 27, abstract -----</p>	1-27
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/024314

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>NISHIGAKI IKUO ET AL: "Suppressive effect of astaxanthin on lipid peroxidation induced in rats"</p> <p>JOURNAL OF CLINICAL BIOCHEMISTRY AND NUTRITION,</p> <p>vol. 16, no. 3, 1994, pages 161-166,</p> <p>XP008040155</p> <p>ISSN: 0912-0009</p> <p>page 161, Summary</p> <p>-----</p>	1-27

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/024314

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 1 - 27 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/024314

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9613255	A	09-05-1996	US	5527533 A		18-06-1996
			CA	2203836 A1		09-05-1996
			EP	0786990 A1		06-08-1997
			WO	9613255 A1		09-05-1996
JP 2049091	A	19-02-1990	JP	2619491 B2		11-06-1997